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What is claimed is:

1. A non-aqueous solvent-soluble hologram recording material composition comprising (A) an allyl-based prepolymer being soluble in a non-aqueous solvent and having at least one allyl group in a molecule thereof and a molecular weight of 10,000 to 100,000, (B) a (meth)acrylate-based compound having at least one polymerizable unsaturated group in a molecule thereof, and (C) a photo-polymerization initiator, wherein a difference between a refractive index of said allyl-based prepolymer (A) and a refractive index of a polymer of said (meth)acrylate compound (B) is 0.005 or more.

2. A hologram recording material composition as claimed in claim 1, wherein said composition further comprises (D) a solvent-soluble thermoplastic resin in a weight ratio to said allyl-based prepolymer (A), (A) : (D) of 80 to 100 : 20 to 0.

3. A hologram recording material composition as claimed in claim 1, wherein said allyl-based prepolymer (A) is a homopolymer of an allyl-based monomer having at least two allyl groups in a molecule thereof or a copolymer of said allyl-based monomer and another copolymerizable monomer, the copolymer containing a polymeric unit of said allyl-based monomer in an amount of more than 20% (excluding 20%).

4. A hologram recording material composition as claimed in claim 3, wherein said allyl-based monomer is a diallylphthalate-based monomer.

5. A hologram recording material composition as claimed in claim 1, wherein said allyl-based prepolymer (A) is an organic-inorganic

complex transparent uniform material obtained by subjecting a metallic alkoxide having a metallic atom, a group having an aromatic ring, and a hydrolyzable group to dehydration condensation by a sol-gel method in the presence of a diallyl phthalate-based monomer and/or a diallyl phthalate-based polymer.

6. A hologram recording material composition as claimed in claim 1, wherein said allyl-based prepolymer (A) has a thioether group and/or a halogen atom connected to a main chain thereof.

7. A hologram recording material composition as claimed in claim 1, wherein said allyl-based prepolymer (A) is a diallylphthalate-based prepolymer.

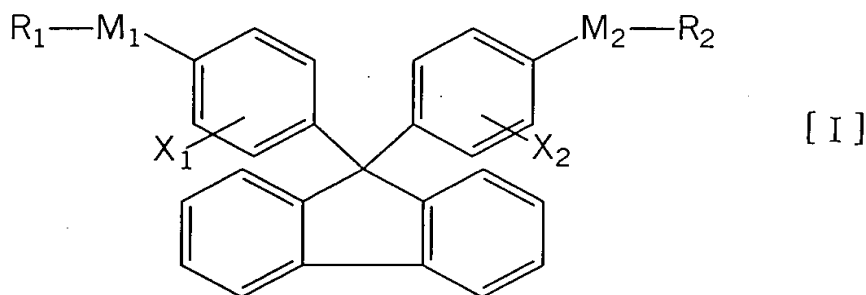
8. A hologram recording material composition as claimed in claim 7, wherein said diallylphthalate-based prepolymer is a prepolymer selected from the group consisting of a diallylorthophthalate prepolymer, a diallylisophthalate prepolymer and a diallylterephthalate prepolymer, or a combination of two or more thereof.

9. A hologram recording material composition as claimed in claim 1, wherein said (meth)acrylate-based compound (B) contains from 1 to 6 of polymerizable unsaturated group, and has a molecular weight of 2,000 or less.

10. A hologram recording material composition as claimed in claim 1, wherein said (meth)acrylate-based compound (B) contains two of polymerizable unsaturated group.

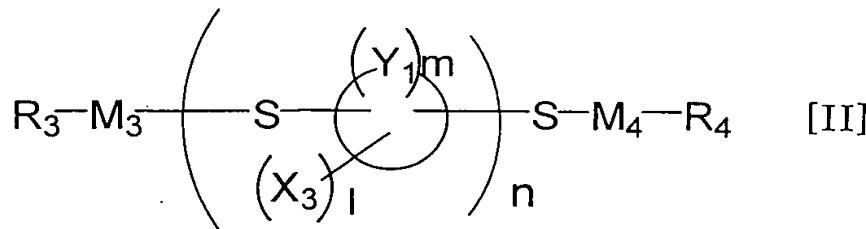
11. A hologram recording material composition as claimed in claim 1, wherein said composition further comprises a viscosity reducing

agent (E) and said (meth)acrylate-based compound (B) contains at least one radical polymerizable compound (b1) selected from the group consisting of a fluorene-based compound represented by the general formula [I],



wherein  $R_1$  and  $R_2$ , being the same or different, are monovalent organic groups, at least one of which has a radical polymerizable group at its terminal,  $M_1$  and  $M_2$ , being the same or different, are divalent organic groups represented by  $-(OR)_{n1}-$  (wherein R is lower alkylene which can have hydroxyl and/or oxygen, and  $n1$  is 0 or an integer of 1 to 5) or single bonds, and  $X_1$  and  $X_2$ , being the same or different, are substituents of the rings and are halogen, hydroxyl or lower alkyl,

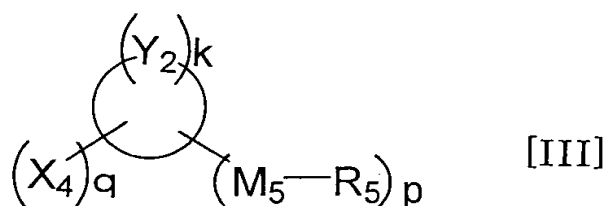
a sulfide-based cyclic compound represented by the general formula [II],



wherein  $R_3$  and  $R_4$ , being the same or different, are monovalent organic groups, at least one of which has a radical polymerizable group at its terminal,  $M_3$  and  $M_4$ , being the same or different, are divalent organic

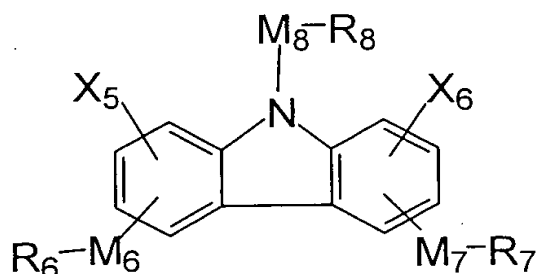
groups represented by  $-(OR)_{n2}$  (wherein R is lower alkylene which can have hydroxyl and/or oxygen, and  $n2$  is 0 or an integer of 1 to 5) or single bonds,  $X_3$  is a substituent of the ring and is halogen, hydroxyl or lower alkyl, "1" is an  $X_3$  number of 0 to 6,  $Y_1$  is a ring member atom constituting the ring, all of the atoms  $(Y_1)_m$  are carbon atoms, or a portion of them is carbon atom(s) and the rest atoms are heteroatoms, and "m" is a member number of the ring of 5 to 8,

a halogenated cyclic compound represented by the general formula [III],



wherein  $X_4$  is a substituent of the ring, at least one of plural  $(X_4)_q$  is halogen and others are hydroxyl or lower alkyl, "q" is an integer of 2 to 6,  $R_5$  is a monovalent organic group, at least one of plural  $(R_5)_p$  has a radical polymerizable group at its terminal,  $M_5$  is a divalent organic group represented by  $-(OR)_{n3}$  (wherein R is lower alkylene which can have hydroxyl and/or oxygen, and  $n3$  is 0 or an integer of 1 to 5) or a single bond, "p" is an integer of 1 to 4,  $Y_2$  is a ring member atom constituting the ring, all of the atoms  $(Y_2)_k$  are carbon atoms, or a portion of them is carbon atom(s) and the rest atoms are heteroatoms, and "k" is a member number of the ring of 5 to 8, and

a carbazole-based compound represented by the general formula [IV],



[IV]

wherein  $R_6$ ,  $R_7$  and  $R_8$ , being the same or different, are monovalent organic groups, at least one of which has a radical polymerizable group at its terminal,  $M_6$ ,  $M_7$  and  $M_8$ , being the same or different, are divalent organic groups represented by  $-(OR)_{n4}-$  (wherein  $R$  is lower alkylene which can have hydroxyl and/or oxygen, and  $n4$  is 0 or an integer of 1 to 5) or single bonds, and  $X_5$  and  $X_6$ , being the same or different, are substituents of the ring and are halogen, hydroxyl or lower alkyl.

12. A hologram recording material composition as claimed in claim 11, wherein a weight ratio of at least one radical polymerizable compound (b1) selected from the group consisting of a fluorene-based compound [I], a sulfide-based cyclic compound [II], a halogenated cyclic compound [III] and a carbazole-based compound [IV] to at least one radical polymerizable compound (b2) selected from the group consisting of the other radical polymerizable compounds than the fluorene-based compound [I], the sulfide-based cyclic compound [II], the halogenated cyclic compound [III] and the carbazole-based compound [IV], (b1) : (b2) is 10 to 100 : 0 to 90 in said (meth)acrylate-based compound (B).

13. A hologram recording material composition as claimed in claim 2, wherein said solvent-soluble thermoplastic resin (D) has a

refractive index of 1.300 to 1.800.

14. A hologram recording material composition as claimed in claim 2, wherein said solvent-soluble thermoplastic resin (D) is one or a combination of two or more selected from the group consisting of a condensation polymerization product of a diphenol compound and a dicarboxylic acid compound, a resin having a carbonate group in a molecule thereof, a resin having an  $-SO_2-$  group in a molecule thereof, polyvinylidene chloride, and a homopolymer or copolymer obtained by polymerizing at least one monomer having an ethylenic unsaturated double bond.

15. A hologram recording material composition as claimed in claim 11, wherein said viscosity reducing agent (E) is a compound (e1) which is nonreactive on said allyl-based prepolymer (A) and said (meth)acrylate-based compound (B) or a compound (e2) having allyl or methallyl in a molecule thereof.

16. A hologram recording medium comprising a substrate having formed thereon a recording layer comprising a hologram recording material composition claimed in claim 1.

17. A non-aqueous solvent-based hologram recording material composition comprising (A) an allyl-based prepolymer having at least one allyl group in a molecule thereof and a molecular weight of 10,000 to 100,000, (B) a (meth)acrylate-based compound having at least one polymerizable unsaturated group in a molecule thereof, (C) a photo-polymerization initiator, and a non-aqueous solvent, wherein a difference between a refractive index of said allyl-based prepolymer (A) and a refractive index of a polymer of said (meth)acrylate compound (B) is 0.005

or more.

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